| Site No. | Visual Resource | Alternative Candidate Build Alternatives | | |
|---|---|---|---|---|
| | | One | Two | Three |
| 24 | New Bohemia | Impact, Not Adverse | Impact, Not Adverse | Impact, Not Adverse |
| 25 | Farmland near New Bohemia | Adverse Impact | Adverse Impact | Adverse Impact |
| 26 | Scared Heart Church | Impact, Not Adverse | Impact, Not Adverse | Impact, Not Adverse |

#### 4.4.3.1 Mitigation

If a build alignment is selected efforts will be made to minimize impacts to these visual resources that may result from the construction of this project. These mitigation measures may include landscaping (i.e. plantings and/or berms) to screen the resource from the proposed roadway or lowering the elevation (depressing) of the roadway so that it will not be viewed from the resource. At the Blackwater River bridge, tree removal around the bridge approaches would be minimized to the extent possible. In addition, VDOT may consider a context sensitive design to minimize visual impacts from the river and help return the landscape to a more natural-looking setting. All mitigation efforts will be coordinated with the appropriate local, state, or federal agency as necessary.

## 4.5 SOCIOECONOMIC IMPACTS

This section addresses direct social and economic impacts including displacements, community impacts, impacts to environmental justice populations, and economic impacts. Indirect and cumulative social and economic impacts are summarized briefly in *Route 460 Socioeconomic Technical Report* and addressed in detail in the *Route 460 Indirect Effects and Cumulative Impacts Technical Report* and the Indirect Effects and Cumulative Impacts section of this document (Sections 4.18 and 4.19).

### 4.5.1 Displacements

#### 4.5.1.1 No-Build and TSM Alternatives

The No-Build Alternative and TSM Alternative would not displace any residents, businesses, farms, or non-profit organizations.

#### 4.5.1.2 Build Alternatives

For each CBA, Table 4.5-1 presents the number of households, businesses, farms, and non-profit organizations that would be displaced under each CBA. The width of the Design Corridor allows for the minimization of displacement impacts to residents, businesses, farms, and non-profit organizations when compared to the Planning Corridor. CBA 2 would displace the greatest number of households (187 Planning Corridor / 58 Design Corridor). CBA 3 would displace the fewest households, with only 51 in the Planning Corridor and 32 within the Design Corridor.

CBA 3 would not displace any businesses, while CBA 2 would displace the greatest number of businesses (32 Planning Corridor / 16 Design Corridor). CBA 1 would have the least displacement impact to farms (6 Planning Corridor / 0 Design Corridor), while CBA 3 would displace the greatest number of farms (9 Planning Corridor / 6 Design Corridor). CBA 2 would displace seven non-profit organizations in the Planning Corridor and four in the Design Corridor, while CBA 1 and 3 would each displace a single non-profit organization.

Most of the residential displacements for CBA 1 would occur in Isle of Wight, Prince George, and Sussex Counties. CBA 2 in the Planning Corridor would result in a higher percentage of displacements in Isle of Wight, Prince George, and Southampton Counties, while in the Design Corridor these displacements would be more focused in Isle of Wight County. CBA 3 in the Planning Corridor and Design Corridor

would result in a higher percentage of displacements in Isle of Wight and Prince George Counties. See the Socioeconomic Technical Report for more information.

**Table 4.5-1**
**DISPLACEMENTS BY CBA**

| Alternative | Number of Households Displaced | | Number of Businesses Displaced | | Number of Farms Displaced | | Number of Non-Profit Organizations Displaced | |
|---|---|---|---|---|---|---|---|---|
| | Planning Corridor | Design Corridor | Planning Corridor | Design Corridor | Planning Corridor | Design Corridor | Planning Corridor | Design Corridor |
| CBA 1 | 89 | 53 | 5 | 1 | 6 | 0 | 1 | 1 |
| CBA 2 | 187 | 58 | 32 | 16 | 7 | 5 | 7 | 4 |
| CBA 3 | 51 | 32 | 0 | 0 | 9 | 6 | 1 | 1 |

Source: Michael Baker, Jr. February 2005

**Table 4.5-2**
**HOUSEHOLD OCCUPANCY STATUS OF RESIDENTIAL DISPLACEMENTS**

| Build Alternative | | Household Displacements | | | | |
|---|---|---|---|---|---|---|
| | | Total # | Owner Occupied | | Renter Occupied | |
| | | | # | % | # | % |
| CBA 1 | Planning Corridor | 89 | 75 | 84% | 14 | 16% |
| | Design Corridor | 53 | 45 | 85% | 8 | 15% |
| CBA 2 | Planning Corridor | 187 | 147 | 79% | 40 | 21% |
| | Design Corridor | 58 | 47 | 81% | 11 | 19% |
| CBA 3 | Planning Corridor | 51 | 43 | 84% | 8 | 16% |
| | Design Corridor | 32 | 26 | 81% | 6 | 19% |

Source: 2000 Census, Michael Baker Jr.

**Table 4.5-3**
**CHARACTERISTICS OF DISPLACED RESIDENTS**

| Build Alternative | | Characteristics of Displaced Residents | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Total # | Elderly | | Minority | | Low-Income | |
| | | | # | % | # | % | # | % |
| CBA 1 | Planning Corridor | 220 | 28 | 13% | 76 | 35% | 20 | 9% |
| | Design Corridor | 130 | 18 | 14% | 50 | 38% | 13 | 10% |
| CBA 2 | Planning Corridor | 464 | 83 | 18% | 244 | 53% | 47 | 10% |
| | Design Corridor | 136 | 31 | 23% | 65 | 48% | 13 | 10% |
| CBA 3 | Planning Corridor | 132 | 17 | 13% | 36 | 27% | 13 | 10% |
| | Design Corridor | 85 | 11 | 13% | 25 | 29% | 9 | 11% |

Source: 2000 Census, Michael Baker Jr.

The characteristics identified in the previous tables were used to identify relocation needs. Displaced property owners would be provided relocation assistance advisory services together with the assurance

of the availability of decent, safe, and sanitary housing. Implementation of the acquisition and relocation program developed by VDOT would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended, 1987). Relocation resources would be made available to all displacees without discrimination. A detailed description of relocation options is provided in the *Right of Way and Cost Technical Report*. A summary of the available replacement housing and specific relocation concerns can be found in the *Socioeconomic Technical Report.*

Field review and discussions with local representatives suggest that adequate relocation options are available in each community for displaced businesses and non-profits. Based on the size of agricultural operations in the study area, most displaced farms will be able to relocate their farm structure on their existing property.

### 4.5.2 Social Consequences

#### 4.5.2.1 No-Build and TSM Alternative Impacts

The No-Build and TSM Alternatives would not result in any displacements or visual impacts. Approximately 20 residences would experience noise impacts under the No-Build Alternative along Route 406, due to the increasing traffic volumes.

Currently, Route 460 bisects the communities of Disputanta, Waverly, Wakefield, Ivor, Zuni, and Kings Fork. Current traffic levels and lack of consistent shoulder limit bicycle and pedestrian mobility along Route 460 in each community. Also, due to increasing traffic volumes along Route 460, approximately 20 residences would experience noise impacts under the No-Build Alternative. This would be due to increasing traffic volumes along Route 460.

By the year 2026, average daily traffic volumes for the No-Build and TSM Alternatives are projected to increase between 34 and 70 percent over existing volumes. The national average for truck traffic on rural arterial highways is 10 percent (FHWA, 1996). In contrast, the percentage of truck traffic on Route 460 ranges from 18 to 30 percent under existing conditions and will increase to a range of 30 to 37 percent in 2026 with the No Build and TSM Alternatives. Due to the high percent of truck traffic, high travel speeds, and a lack of protected turning movements, residents have noted throughout the public involvement process their concerns with regard to safety when crossing or turning on Route 460. Local services such as emergency service response, mail delivery, and school bus routes are sensitive to these increases in traffic and truck volumes. The deterioration in local accessibility resulting from traffic conditions would further exacerbate the physical bisection of existing Route 460 on each of the communities. Compared to the No-Build Alternative, the TSM Alternative will provide modest safety improvements for travelers along Route 460. Details on roadway improvements associated with the TSM Alternative are discussed in Chapter 2, and in the *Alternatives Development Technical Report.*

#### 4.5.2.2 Build Alternative Impacts

A summary of social impacts to the communities along Route 460 and neighborhoods within the study area is presented in Table 4.5-4 through Table 4.5-6. The *Socioeconomic Technical Report* discusses these impacts in detail. As noted in these tables, each CBA would result in displacements. Residents, businesses, and non-profit organizations may choose to relocate within their current community or may leave the community entirely. The degree to which residents, businesses, and non-profit organizations choose to relocate within the same community will influence the level of community disruption. To provide information on how certain areas would be affected, noise and visual impacts are included.

**Table 4.5-4**
**SOCIAL CONSEQUENCES OF CBA 1**

| Community or Neighborhood | Total Number of Displacements* | Visual Impacts | Noise Impacts | Mobility** |
|---|---|---|---|---|
| New Bohemia (Prince George) | 12 residences and 5 businesses (7 residences and 1 business) | Impact, not adverse | 5 | Improved mobility for emergency vehicles and non-motorized travel on Route 460.<br>Direct access to additional hurricane evacuation route. |
| Farmington Estates (Prince George) | 4 residences (1 residence) | -- | 6 | No impact |
| Continental Forest (Prince George) | 3 residences (2 residences) | -- | 7 | No impact |
| Charleston Estates (Prince George) | No impact | -- | 11 | Improved mobility for emergency vehicles due to direct interchange access.<br>Direct access to additional hurricane evacuation route. |
| Disputanta (Prince George) | No impact | No impact | 0 | Improved mobility for emergency vehicles and non-motorized travel on Route 460.<br>Direct access to additional hurricane evacuation route.<br>Provides 18 minutes of travel time savings to Suffolk. |
| Waverly (Sussex) | 11 residences and Shilo Holiness Church | Impact, not adverse | 4 | Improved mobility for emergency vehicles and non-motorized travel on Route 460.<br>Non-motorized travel would be affected by increased traffic levels on Route 40 at the interchange ramp areas.<br>Direct access to additional hurricane evacuation route.<br>Provides 12 minutes of travel time savings to Suffolk. |
| Wakefield (Sussex) | No impact | No impact | 0 | Improved mobility for emergency vehicles and non-motorized travel on Route 460.<br>Direct access to additional hurricane evacuation route.<br>Provides six minutes of travel time savings to Petersburg and eight minutes to Suffolk. |
| Ivor (Southampton) | No impact | No impact | 0 | Improved mobility for emergency vehicles and non-motorized travel on Route 460.<br>Direct access to additional hurricane evacuation route.<br>Provides nine minutes of travel time savings to Petersburg and seven minutes to Suffolk. |
| Tucker Swamp Road (Rt. 635) (Southampton) | 3 residences (1 residence) | -- | 6 | No impact |
| Zuni (Isle of Wight) | No impact | No impact | 0 | Provides 11 minutes of travel time savings to Petersburg and five minutes to Suffolk. |
| Thomas Woods Trail (Rt. 614) (Isle of Wight) | 4 residences (2 residences) | -- | 5 | No impact |
| Mill Creek Drive/ Barrett Town (Rts. 638 and 641) (Isle of Wight) | 20 residences (12 residences) | -- | 33 | No impact |
| Windsor (Isle of Wight) | 2 residences | Impact, not adverse | 12 | Improved mobility for emergency vehicles and non-motorized travel on Route 460.<br>Non-motorized travel would be affected by increased traffic levels on Route 258 (Bank Street) at the interchange ramp areas.<br>Direct access to additional hurricane evacuation route.<br>Provides 15 minutes of travel time savings to Petersburg. |
| Kings Fork (Suffolk) | 3 residences (2 residences) | -- | 10 | Provides 18 minutes of travel time savings to Petersburg. |

Source: Parsons Brinkerhoff and Michael Baker Jr., 2005.
-- Visual impacts not determined at the neighborhood level.
*When different, displacements impacts are provided for both Planning Corridor and Design Corridor, with Design Corridor totals in parenthesis.
**Travel time savings are compared to 2026 No Build

**Table 4.5-5**
**SOCIAL CONSEQUENCES OF CBA 2**

| Community or Neighborhood | Total Number of Displacements* | Visual Impacts | Noise Impacts | Mobility |
|---|---|---|---|---|
| New Bohemia (Prince George) | 14 residences, 14 businesses, Sacred Heart Church, and American Legion (2 residences, 4 businesses, and American Legion) | Impact, not adverse | 0 | No impact |
| Disputanta (Prince George) | 4 residences | Impact, not adverse | 3 | Improved mobility for emergency vehicles and non-motorized travel within community due to decreased traffic on Route 460. Provides 11 minutes of travel time savings to Suffolk. |
| Waverly (Sussex) | No impact | Impact, not adverse | 8 | Improved mobility for emergency vehicles and non-motorized travel within community due to decreased traffic on Route 460. Provides 10 minutes of travel time savings to Suffolk. |
| Wakefield (Sussex) | No impact | No impact | 0 | Improved mobility for emergency vehicles and non-motorized travel within community due to decreased traffic on Route 460. Increased traffic through Mars Hill neighborhood on Rt. 31. Provides eight minutes of travel time savings to Suffolk. |
| Ivor (Southampton) | No impact | Impact, not adverse | 0 | Improved mobility for emergency vehicles and non-motorized travel within community due to decreased traffic on Route 460. Provides three minutes of travel time savings to Petersburg and six minutes to Suffolk. |
| Rts. 460 and 635 – east of Ivor (Southampton) | 42 residences, 3 businesses (12 residences, 2 businesses) | -- | 5 | Increased traffic on Route 460. |
| Zuni (Isle of Wight) | 4 residences (3 residences) | Impact, not adverse | 0 | Improved mobility for emergency vehicles and non-motorized travel within community due to decreased traffic on Route 460. Provides four minutes of travel time savings to Petersburg and five minutes to Suffolk. |
| Windsor (Isle of Wight) | 8 residences | Impact, not adverse | 34 total, 22 in Twin Ponds MHP | Provides four minutes of travel time savings to Petersburg and five minutes to Suffolk. |
| Kings Fork (Suffolk) | 3 residences (2 residences) | -- | 8 | Provides nine minutes of travel time savings to Petersburg. |

Source: Parsons Brinkerhoff and Michael Baker Jr., 2005.
-- Visual impacts not determined at the neighborhood level.
*When different, displacements impacts are provided for both Planning Corridor and Design Corridor, with Design Corridor totals in parenthesis.
**Travel time savings are compared to 2026 No Build

**Table 4.5-6**
**SOCIAL CONSEQUENCES OF CBA 3**

| Community or Neighborhood | Total Number of Displacements* | Visual Impacts | Noise Impacts | Mobility |
|---|---|---|---|---|
| New Bohemia (Prince George) | 2 residences | Impact, not adverse | 5 | Improved mobility for emergency vehicles and non-motorized travel on Route 460.<br>Direct access to additional hurricane evacuation route. |
| Route 635 (Prince George) | 6 residences (4 residences) | -- | 7 | No impact |
| Disputanta (Prince George) | No impact | No impact | 0 | Improved mobility for emergency vehicles and non-motorized travel on Route 460.<br>Direct access to additional hurricane evacuation route.<br>Provides 18 minutes of travel time savings to Suffolk. |
| Waverly (Sussex) | No impact | Impact, not adverse | 5 | Improved mobility for emergency vehicles and non-motorized travel on Route 460.<br>Direct access to additional hurricane evacuation route.<br>Provides four minutes of travel time savings to Petersburg and 18 to Suffolk. |
| Wakefield (Sussex) | No impact | No impact | 0 | Improved mobility for emergency vehicles and non-motorized travel on Route 460.<br>Direct access to additional hurricane evacuation route.<br>Provides seven minutes of travel time savings to Petersburg and ten minutes to Suffolk. |
| White Marsh Road (Rt. 617) (Surry) | 6 residences (5 residences) | -- | 7 | No impact |
| Ivor (Southampton) | No impact | No impact | 0 | Improved mobility for emergency vehicles and non-motorized travel on Route 460.<br>Direct access to additional hurricane evacuation route.<br>Provides eight minutes of travel time savings to Petersburg and seven minutes to Suffolk. |
| Tomlin Hill Drive and Dodge Lane (Isle of Wight) | 3 residences (1 residence) | -- | 9 | No impact |
| Zuni (Isle of Wight) | No impact | No impact | 0 | Improved mobility for emergency vehicles and non-motorized travel on Route 460, due to reduced traffic. |
| Clydesdale Mobile Home Park | No impact | -- | 18 | No impact |
| Windsor (Isle of Wight) | No impact | Impact, not adverse | 42 (Windsor Woods) | Improved mobility for emergency vehicles and non-motorized travel on Route 460.<br>Direct access to additional hurricane evacuation route.<br>Provides 14 minutes of travel time savings to Petersburg and five minutes to Suffolk. |
| Shilo Drive (Isle of Wight) | 5 residences (2 residences) | -- | 9 | No impact |
| Kings Fork (Suffolk) | 3 residences (2 residences) | -- | 9 | Provides 18 minutes of travel time savings to Petersburg. |

Source: Parsons Brinkerhoff and Michael Baker Jr., 2005.
-- Visual impacts not determined at the neighborhood level.
*When different, displacements impacts are provided for both Planning Corridor and Design Corridor, with Design Corridor totals in parenthesis.
**Travel time savings are compared to 2026 No Build

CBA 2 would displace the greatest number of non-profit organizations. These displacements in the Planning Corridor of CBA 2 include: Sacred Heart Catholic Church, American Legion, Disputanta Ruritan Club, Windsor Convenience Center (recycling), Marantha Bible Church, and three small family

cemeteries. The displacements in the Design Corridor include the American Legion, Windsor Convenience Center, and two small family cemeteries. CBA 1 and 3 each displace one non-profit organization, Shilo Holiness Church and Marantha Bible Church, respectively.

During coordination with representatives of Prince George and Sussex Counties, it was noted that CBAs 1 and 3 would potentially travel through planned and approved subdivision areas. As these subdivisions are not currently developed, their planned layout could potentially be adjusted should either of these CBAs be selected.

The CBAs would not result in adverse visual impacts to any of the communities along Route 460. A discussion of visual impacts is presented in Section 4.4. The number of noise impacts to homes within specific communities and neighborhoods varies according to location. Details regarding noise impacts are found in Section 4.9 and in the *Noise Analysis Technical Report*. The construction of noise barriers to mitigate noise impacts has been considered at every location where a noise impact has been predicted. Noise barriers will minimize noise impacts to communities and neighborhoods. FHWA and VDOT require that noise barriers be both "feasible" and "reasonable" to be recommended for construction. The feasibility of constructing noise barriers will be fully evaluated for those properties impacted by the preferred alternative later in the project development process.

Residents, businesses, and emergency response services would benefit from an additional hurricane evacuation route provided under either CBA 1 or 3. CBA 1 or 3 would provide an improved, safer, and faster hurricane evacuation route than currently exists on Route 460. Improved drainage design features and current roadway design standards would prevent roadway flooding that typically happens in the low-lying areas through which existing Route 460 traverses. While CBA 2 would provide travel time savings for hurricane evacuation, it would not provide an alternative and additional evacuation route for the region.

Residents and businesses would benefit from improved travel time savings associated with all three CBAs. Travel time savings are discussed in the *Indirect Effects and Cumulative Impacts Technical Report.* Residents near planned interchange areas would benefit from decreased travel times to employment centers in Petersburg and Suffolk. Residents and local representatives have expressed concern about the impact of the potential loss of traffic for local highway and tourist-related businesses located within the communities. These impacts are described in detail in the *Indirect and Cumulative Technical Report* and summarized in Sections 4.18 and 4.19.

Traffic volumes would be greatly reduced from existing Route 460 in each of the communities, ranging from 50 to 90 percent, depending on the CBA and the location. The percentage of truck traffic on Route 460 in the center of bypassed communities would be between 7 and 9 percent of total traffic volumes compared to 30 to 37 percent under the No-Build and TSM Alternatives. Given that the national average for truck traffic on similar rural arterials is 10 percent, these truck volumes would be more in keeping with the national average. The lower traffic volumes on Route 460 would directly benefit local services that travel daily along Route 460 such as emergency response services (police, fire, medical), school buses, and mail delivery.

The CBAs would have a similar effect on local accessibility and mobility. The reduction in automobile and truck traffic on Route 460 would make vehicular and non-motorized travel patterns safer within each community, and might result in more pedestrian/bicyclist crossings and interaction. The reduction in traffic levels and improved local accessibility would reduce the level of separation caused by Route 460 for the seven communities along the project corridor. Emergency response services would specifically benefit from improved local accessibility and mobility, potentially decreasing incident response times.

Interchange locations along secondary roadways will be grade separated, thus would not limit non-motorized travel along the existing secondary roads. However, the secondary roads with interchange locations would experience higher traffic levels than in the No-Build and TSM Alternatives. Potential mitigation measures to minimize the impact of increased traffic on secondary roads near interchange ramp locations may include the provision of sidewalks or other design features such as wide paved shoulders to improve safety conditions for pedestrians and bicyclists.

### 4.5.3 Environmental Justice Consequences

#### 4.5.3.1 No-Build and TSM Alternatives

No direct effects on low-income or minority populations have been identified for the No-Build Alternative. The TSM Alternative would improve the safety of all travelers on Route 460, including low-income and minority residents of the area and through-travelers. This is a positive effect and would not disproportionately adversely affect either the low-income or minority concentrations or individuals in the study area. As discussed in Section 2.5, traffic volumes and the percentage of truck traffic will increase by the year 2026. This deterioration in local accessibility would further exacerbate the physical bisection of existing Route 460 on each of the seven communities, equally affecting minority and low-income populations and non-minority and non-low-income populations.

#### 4.5.3.2 Build Alternatives

Table 4.5-3 shows the estimated number of minority and low-income residents that would be displaced by each CBA. The characteristics of these residents were estimated based on information from the 2000 Census, which were confirmed with meetings with local planners and during field review. CBA 2 would displace the highest number of minority persons with 224 in the Planning Corridor and 65 in the Design Corridor. Similarly, CBA 2 at the Planning Corridor would result in the greatest number of low-income residents displaced with 47 residents. All three CBAs at the Design Corridor would displace a much lower number of low-income residents (between 9 and 14 residents). The Design Corridor is able to minimize impacts to all residents, including minority and low-income residents. In general, the severity of the displacements impacts to minority and low-income populations is proportional to the occurrence of these populations throughout the study area. Minority residents account for 27 percent to 38 percent of the total displacements with CBA 1 or 3, compared to the study area minority population of 37 percent. The minority residential displacements associated with CBA 2 (48 percent to 53 percent) exceed the study area's 37 percent minority population. The low-income displacements associated with CBAs 1, 2, and 3 (ranging from 9 percent to 11 percent) are comparable to the study area average of 9 percent.

CBA 1 would have impacts on minority and low-income populations in Waverly and Windsor. In Waverly, CBA 1 in both the Planning and Design Corridors would displace 11 minority households and Shilo Holiness Temple, which serves minority community members. The access provided by the interchange ramps on Route 40 would increase traffic for remaining residents along Route 40 and Sussex Trace Apartments. As noted by local representatives, this community relies heavily on non-motorized transportation, so pedestrian safety features, such as sidewalks or wide paved shoulders, would be considered along Route 40 between the CBA interchange ramp locations to improve safety conditions for pedestrians and bicyclists. In Windsor, CBA 1 would provide interchange ramps on Bank Street (Route 258), displacing 2 households. This area along Bank Street (including Bear Trap Circle) was provided water and sewer with Community Block Development Grant funds in 1998.

CBA 2 would displace the American Legion and the Disputanta Ruritan Club. These clubs are predominantly comprised of minority members. It is likely that these community facilities will be able to relocate along Route 460 and continue serving minority residents in the New Bohemia and Disputanta communities. CBA 2 and 3 will alter traffic levels along Route 31 in the Mars Hill neighborhood. This neighborhood includes both minority and low-income populations. In Windsor, CBA 2 would provide interchange ramps on Route 258 between Twin Ponds MHP and Windsor Court Apartments and the Windsor Middle School. Pedestrian safety features, such as sidewalks or wide paved shoulders would be considered along Route 258 between CBA interchange ramp locations to improve safety conditions for pedestrians and bicyclist access from these residential areas to Windsor Middle School. Both residential areas include minority and low-income populations and Windsor Court Apartments includes residents who receive Section 8 housing assistance.

CBA 3 would alter traffic levels along Route 31 in the Mars Hill neighborhood. This neighborhood includes both minority and low-income populations.

As noted above, each of the CBAs would directly affect minority and low-income populations. All three CBAs would provide similar benefits to minority and low-income residents. CBA 3 would have the least adverse impacts to minority and low-income populations, while CBA 2 would have the greatest impact. This is consistent with the displacement and social impacts to the overall population. The impacts to minority and low-income populations from the CBAs are not considered disproportionately high and adverse since:

- The CBAs would provide offsetting economic and social benefits to the affected populations;
- Avoidance measures (Design Corridor) would be taken to reduce adverse impacts;
- Adverse impacts to minority and low-income populations would be proportional to impacts to the overall population;
- Minority and low-income populations have participated in and provided meaningful input throughout the transportation planning process; and
- Mitigation measures (see Section 4.5.6) would benefit minority and low-income populations as well as the overall population and continued outreach will identify measures to specifically benefit minority and low-income populations.

### 4.5.4 Economic Consequences

Economic impacts were addressed on several different levels. Direct impacts include the displacement of existing businesses and jobs and the loss of property tax revenues. Indirect and cumulative impacts include employment growth related to induced development, travel time savings and access benefits to industrial developments, and potential bypass effects to existing business districts. These indirect and cumulative economic impacts are discussed in detail in the Indirect and Cumulative Technical Report, summaries of these impacts are provided in the following sections.

Direct business and employment displacements and loss of property tax revenues were determined based on GIS analysis of aerial photography and field review. Both Planning and Design Corridor footprint impacts were evaluated. Due to the preliminary nature of the study, individual businesses were not contacted regarding potential displacements; therefore, it was not feasible to determine the specific relocation needs of these businesses. Secondary data sources and interviews with local officials were used to identify general characteristics.

#### 4.5.4.1 No-Build Alternative and TSM Alternative

The No-Build and TSM Alternatives would not displace any businesses. No loss of local property tax revenues would occur as a result of the No-Build or TSM Alternatives.

Changes in planned land use are not expected under either the 2026 No-Build or the TSM Alternative. It is assumed that approved projects and land uses will develop as planned. However, the increasing travel-time delays do not benefit the planned economic development along the Route 460 corridor. Travel times from Petersburg to Suffolk are anticipated to increase by 8 minutes (11%) between 2000 and 2026. These alternatives would not improve regional access or provide travel time savings to any industrial park, enterprise zone, or shipping-related industry within the study area.

#### 4.5.4.2 Build Alternatives

*Displacement Impacts*

CBAs 1 and 2 would displace businesses, while CBA 3 would not result in any business displacements. CBA 2 would result in the greatest number of estimated business displacements (32 Planning Corridor /

16 Design Corridor) and job displacements (255 Planning Corridor / 95 Design Corridor). A majority of these displacements would occur in Prince George County along Route 460 between I-295 and Disputanta. Table 4.5-7 presents the potential business displacements and employment loss by county for CBA 1 and 2. CBA 3 is not included in this table because there would not be any business displacements with this alternative. No displacements would occur within the business districts of the seven communities along Route 460. Displaced businesses would result in temporary losses of sales tax revenues. Discussions with local representatives and field review indicated that adequate relocation options are available for all displaced businesses to relocate within their current communities. Therefore, localities would not experience permanent sales tax revenue losses unless displaced businesses choose not to relocate in the same locality. This analysis does not attempt to estimate how many businesses would not relocate or reopen if displaced.

**Table 4.5-7**
**POTENTIAL BUSINESS DISPLACEMENTS**

| Displacements | CBA 1 | | CBA 2 | |
|---|---|---|---|---|
| | Planning Corridor | Design Corridor | Planning Corridor | Design Corridor |
| No. of Businesses | 5 | 1 | 32 | 16 |
| Estimated No. of Employees | 40 | 10 | 240 | 90 |

Note: CBA 3 would not displace any businesses or employees. Therefore, it was not included in this table.
Source: Michael Baker, Jr., February 2005

*Loss of Property Tax Revenues*

Table 4.5-8 summarizes the fiscal impact of potential property tax revenue losses of the CBAs by jurisdiction. When land and improvements are acquired by VDOT from private property owners, the local governments no longer receive property tax revenues for that property. Properties include residences, businesses, farms, and non-profit organizations as well as undeveloped properties. While this potential loss of property tax revenues comprises a small proportion of each locality's budget, it is a direct economic impact of the construction of the CBAs. CBA 2 would have the greatest fiscal impact at a loss of $241,761 in property tax revenues in the Planning Corridor and $92,414 in the Design Corridor. CBA 3 would have the least fiscal impact with the loss of $99,601 in property tax revenues in the Planning Corridor and $57,430 in the Design Corridor. As with other impacts, the Design Corridor would greatly minimize potential fiscal impacts. These impacts do not account for the likely event that the improvements displaced (i.e., homes and businesses) will relocate/rebuild and, to some undetermined extent, offset the property tax losses with future gains.

As a percentage of total fiscal impact, Prince George County would sustain the greatest property tax losses under CBA 1 and CBA 2. Under CBA 3, the City of Suffolk would sustain the greatest property tax losses.

**Table 4.5-8**
**FISCAL IMPACT TO JURISDICTIONS**

| Build Alternative | Corridor | Total Assessed Value of Land & Improvements Acquired | Fiscal Impact |
|---|---|---|---|
| CBA 1 | Planning Corridor | $16,980,691 | $141,426 |
| | Design Corridor | $9,735,408 | $80,695 |
| CBA 2 | Planning Corridor | $29,876,073 | $241,761 |
| | Design Corridor | $11,165,732 | $92,414 |
| CBA 3 | Planning Corridor | $11,554,094 | $99,601 |
| | Design Corridor | $6,655,374 | $57,430 |

Source: Michael Baker, Jr., February 2005

### 4.5.5 Benefit Cost Analysis : User Benefit and Cost

A Benefit-Cost Analysis (BCA) is a systematic economic means of measuring or comparing the economic feasibility of investments. A BCA measures the direct benefits and costs that a project causes or creates for highway agencies, travelers (users), and, to some non-users affected by the project. Direct benefits and costs are the first order or immediate impacts of the transportation project on users and non-users, and include changes in travel time, accidents, vehicle operating costs, agency construction costs, and pollution costs. The MicroBENCOST computer software was used to apply the BCA methodology.

Capital cost includes the cost of constructing the facility. Benefits represent the difference in travel time cost, vehicle operating cost and accident costs between the existing condition and each CBA. Agency cost is the cost incurred by VDOT, calculated as the total cost of construction plus maintenance and operation less the salvage value. NPV, net present value, is the difference between the discounted user benefit and discounted agency cost. BCR, benefit-cost-ratio, is the ratio derived by dividing the discounted user benefit by the discounted agency cost. The results of the BCA are shown in Table 4.5-9. A BCA ratio of 1 or greater indicates an option where the benefits outweigh the costs. All monetary figures are depicted in 2005 dollars.

**Table 4.5-9**
**SUMMARY OF USER BENEFIT AND COST**

| Measures | CBA 1 | CBA 2 | CBA 3 |
|---|---|---|---|
| **Capital Cost** | $470.27 | $584.59 | $490.08 |
| **Benefits** | $498.87 | $450.00 | $515.29 |
| **Agency Cost** | $428.87 | $549.25 | $451.60 |
| **NPV** | $70.01 | -$99.25 | $63.69 |
| **BCR** | **1.16** | **0.82** | **1.14** |

Source: Parsons Brinckerhoff, March 2005

### 4.5.6 Potential Mitigation

*Social/Community Mitigation*

Impacts to social or community resources vary depending on the CBA. Potential minimization of the effects has been evaluated with Design Corridor options. VDOT will seek to minimize the number of displacements during final design as the Planning Corridor allows opportunities for avoidance within the 500-foot corridor. To minimize loss of residents, businesses, farms, and non-profit organizations from each community, VDOT ROW staff will coordinate closely with each locality to determine the feasibility of allowing displacees to relocate on their existing property, if they so desire. This will be addressed on a case-by-case basis and will be determined based on local regulations regarding minimum lot size, zoning, and availability of water and sewer.

To minimize impacts to active farming operations, VDOT will consider options to maintain agricultural access to bisected agricultural parcels. During final design, VDOT will work to minimize uneconomic remnants.

At interchange ramp locations where traffic increases and vehicle interaction might affect pedestrian or bicycle travel on crossroads, VDOT will consider the provision of sidewalks and/or bike paths. Opportunities exist to tie into existing or planned sidewalks within some communities.

VDOT will identify context sensitive design features such as landscaping, berms, and noise walls to reduce noise, visual, and community impacts. Noise barriers will be considered when deemed effective and cost feasible. VDOT will coordinate with the local governments and public to identify which features

would be appropriate for each community. VDOT acknowledges that different communities may have different mitigation needs or preferences and these specific measures will be identified after a preferred alternative is selected.

The CBAs would not result in disproportionately high and adverse impacts to minority or low-income populations and, therefore, specific environmental justice mitigation is not proposed. However, mitigation options presented in the previous section will benefit minority and low-income populations. Furthermore, VDOT's relocation policies provide an added benefit to low-income displacees, some of whom are also a minority. The relocation program outlines special cases where a displacee is eligible for a price differential payment in addition to the fair market value of the property to help defray the costs necessary to purchase a comparable, decent, safe, and sanitary replacement dwelling in a similar neighborhood or housing of last resort. This price differential payment may not exceed $22,500 for homeowners or $5,250 for renters and can also be used toward a down payment, increased mortgage interest costs, and incidental expenses associated with purchasing a home (e.g., title search, recording fees, and closing costs).

As the relocation analysis noted (see Socioeconomic Technical Report), an adequate supply of housing is available for sale or rent within a comparable price range. However, if appropriate housing cannot be found, VDOT can provide necessary housing in a number of ways through an administrative process known as housing of last resort. Housing of last resort may include relocation in a rehabilitated dwelling, construction of an addition to a relocation dwelling, purchase of land and construction of a new replacement dwelling, a replacement housing payment in excess of the price differential, or a direct loan that would enable the displaced person to construct or contract the construction of a replacement dwelling. This is not anticipated to be necessary on this project, but it remains a mitigation option should the need arise for relocation housing for low- to moderate-income households.

*Economic Mitigation*

Economic mitigation for the CBAs includes the following:

- VDOT's right-of-way acquisition and relocation program will be done in accordance with the Federal Uniform Relocation Assistance and real Property Acquisition Act of 1970, as amended and with the Surface Transportation and Uniform Relocation and Assistance Act of 1987 (STURRA). Relocation resources will be available without discrimination.
- VDOT will coordinate closely with each community to determine appropriate signage at interchange areas. The signage may designate historic or shopping districts and may be used to minimize potential bypass effects.
- To the extent possible, final design will consider plans for new industrial developments to minimize footprint impacts to these planned facilities.

## 4.6 HAZARDOUS MATERIALS SITES IDENTIFIED

### 4.6.1 Methods

A database search was conducted using standard environmental record sources (see Table 4.6-1). These databases contain the names and/or locations of reported hazardous waste sites, treatment, storage and disposal facilities, pollution and hazardous waste spills, including Leaking Underground Storage Tanks (LUSTs), and landfills in Virginia. Information from the databases identified properties for further evaluation. Any incident or facility identified within the search distance was reviewed to identify past activities that could potentially result in Recognized Environmental Conditions (RECs) at the subject property or within the search distance. The Hazardous Materials Technical Report describes more fully the approach and analysis methods used to determine identified hazardous material sites.

The database review identified sites that could potentially affect the three CBA corridors. Field review was conducted of these properties to review conditions at each site. At this stage of project development, the analysis focused on identifying sites that posed a so-called fatal flaw, potentially adding considerable cost, delay and/or influencing the selection of an alternative.

**Table 4.6-1**
**STANDARD ENVIRONMENTAL RECORD SOURCES**

| Source | Search Distance (miles) |
|---|---|
| Federal and State Equivalent – National Priorities List (NPL) | 1.0 |
| Federal and State Equivalent - Comprehensive Environmental Response, Compensation and Liability System (CERCLIS) | 0.5 |
| Federal and State Equivalent - Comprehensive Environmental Response, Compensation, and Liability System (CERCLIS), No Further Remedial Action Planned (NFRAP) | Subject and Adjoining Properties |
| Federal List of Treatment, Storage and Disposal (TSD) Facilities Subject to Corrective Action (CORRACTS) under the Resource Conservation and Recovery Act (RCRA) | 1.0 |
| Federal RCRA Non-CORRACTS | 0.5 |
| Federal RCRA Generators List | Subject and Adjoining Properties |
| Federal Emergency Response Notification System (ERNS) List | Subject Property Only |
| State Landfill and/or Solid Waste Disposal Site Lists | 0.5 |
| State Leaking Underground Storage Tanks (LUST) List | 0.5 |
| State Registered Underground and Aboveground Storage Tanks (USTs/ASTs) List | Subject and Adjoining Properties |

### 4.6.2 Results

Table 4.6-2 lists the number of mapped occurrences identified for each CBA considered. A total of 192 sites are located within the corridor. There are 131 mapped sites and 61 unmapped sites, with unmapped sites not located. Unmapped sites may no longer be in existence. Additionally, it is possible that the unmapped sites are the same as some of the mapped sites, with only a change of name. Only five of these unmapped sites are LUSTs. These sites are important because they pose a threat to groundwater quality. Of the total number of sites identified within the corridor, 26 are LUSTs. There are also a number of former and potential former gasoline stations, some with evidence that USTs are still in the ground. As there is greater potential for older tanks to leak, the former and potential former gasoline stations may affect construction.

The majority of the total occurrences identified are within or near CBA 2. Some of the LUSTs may affect more than one CBA, and are listed as such. There are fewer total occurrences for CBA 1 and CBA 3 as these areas are generally less developed and consist of more agricultural and private homes than commercial use.

Occurrences near a corridor, but not within the boundaries of the corridor, could result in potential contamination of the study area, depending on the site characteristics. Subsurface exploration or some other form of subsurface analysis would be required to assess the extent of any potential contamination.

**Table 4.6-2**
**NUMBER OF HAZARDOUS MATERIALS OCCURRENCES IDENTIFIED BY CBA**

| Alternative | Number of Occurrences | |
|---|---|---|
| Candidate Build Alternative | LUST Sites | All Sites[1] |
| 1 | 10 | 34 |
| 2 | 10 | 104 |
| 3 | 3 | 29 |

*Source: Environmental Data Resources, Inc., June 2004.*
Notes:
1. The total number of sites identified include USTs and LUSTs and may also include sites identified in the following databases: CERCLIS, NPL, CERCLIS-NFRAP, RCRIS-SQG, RCRIS-LQG, ERNS, SWF/LF, AST, VRP, FINDS.

### 4.6.3 Hazardous Material Sites Identified for Further Evaluation

Fifteen sites may warrant additional evaluation because of the proximity of the site to the corridor, and the type of hazardous materials contained at the site have the greatest potential to affect property acquisition and construction activities. These 15 sites are listed in Table 4.6-3 and depicted in Figure 4.6-1.

**Table 4.6-3.**
**HAZARDOUS MATERIALS SITES IDENTIFIED FOR FURTHER EVALUATION**

| CBA | Hazardous Materials Site # | Description |
|---|---|---|
| 1 | 24 | Thomas Wright, ERNS site. LUST case. |
| 2 | 30 | Windsor Veterinary Hospital – appears to be a former gas station. |
| | 35 | Pangle's Auto Repair. |
| | 37 | Pearl Line Press – three vent pipes on west side of structure. |
| | 38 | Possible former gas station –one vent pipe and pump island. |
| | 40 | Former gas station, corner of Route 644 and Route 460 –pump island and bays, vent pipe behind structure. |
| | 41 | Former gas station, Route 460 – appears to have former pump island. |
| | 43 | Former gas station, 37262 Route 460 – pump island and four vent pipes. |
| | 70 | Adams Peanuts. Appears to be a former gas station – pump island and two vent pipes. |
| | 93 | Waverly Glass. Appears to be a former gas station. |
| | 97 | Van Cleef. Former gas station – pump island and two USTs. |
| | 98 | B&B Motors. Auto body repair and junkyard –potential hazardous materials. |
| | 99 | John's Auto Body. Appears to have former pump island & UST. |
| | 101 | Vacant former gas station. |
| | 129 | East Coast Gas Station. Open LUST case. |

Note: No sites were identified along CBA 3

### 4.6.4 Fatal Flaws

Fatal flaws are those sites that would add considerable cost, delay and/or influence the selection of an alternative. Examples of potential hazardous materials fatal flaws include superfund sites, solid waste landfills and ordinance ranges. No fatal flaw sites were identified in any of the three CBAs.

### 4.6.5 Mitigation

In order to develop mitigation measures for identified hazardous materials additional evaluations will be required during final design of the proposed project. The level of detail required will depend on specific design criteria of the selected alternative. CBA 2 has hazardous materials site occurrences within the corridor boundaries. These sites provide potential sources of contamination that could affect property acquisition and construction activities. Accordingly, some sites may require some form of mitigation. The selection of mitigation measures for specific sites would include avoidance, minimizing impacts through redesign or alignment shift, and remediation/closure. Any site remediation/closure would be performed in accordance with applicable State and Federal laws. Performance of such measures would occur prior to or during the course of construction, depending on site conditions.

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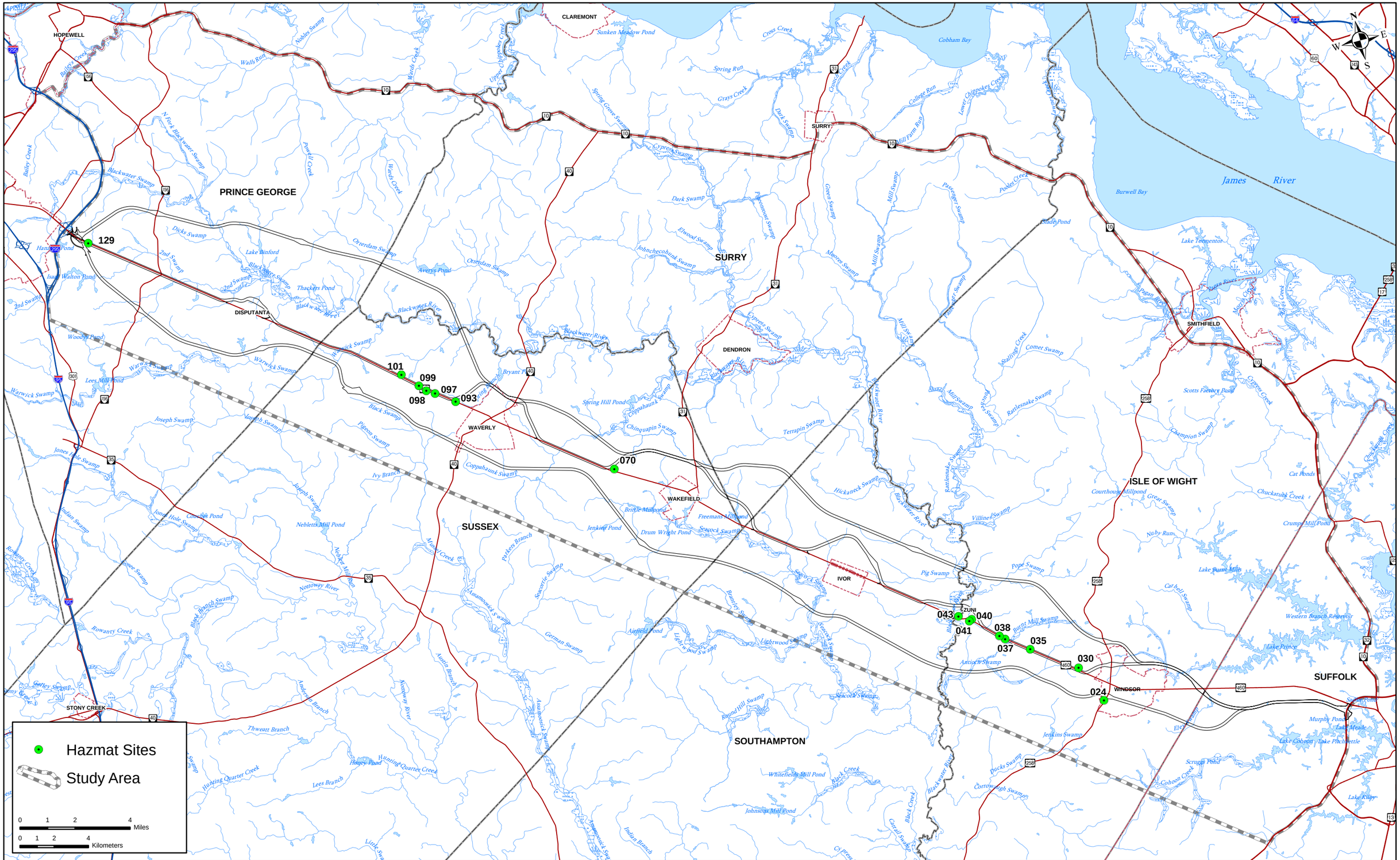


Route 460 Location Study

FIGURE 4.6-1
HAZARDOUS MATERIAL SITES
IDENTIFIED FOR FURTHER EVALUATION